We had prepared feedback on the next gen documents that were distributed on June 6, 2012, but we have now amended the comments to conform to the Broadband Forum (BBF) document that was distributed on August 16, 2012.

The cable industry has not been a participant in the broadband performance measurement initiative at the Broadband Forum

It needs to be understood that the cable industry, and CableLabs in particular, has not been involved in any way in the broadband performance project, WT-304, that is being conducted within the Broadband Forum. It is our understanding that representations to the contrary were made during the most recent next gen meeting, and the record needs to be corrected. We can elaborate upon this at a later date, but it is the cable industry's opinion that the IRTF may be a more appropriate and representative forum to review and assess the broadband performance measurement initiative.

The Reasonable Timeframe for Implementation assumption reflects input only from DSL providers

The document states that "by focusing on activities already contemplated as future improvements, a reasonable timeline for implementation can be achieved." It appears that this reference to "activities already contemplated as future improvements" relates to plans being developed by DSL providers and their equipment vendors, the traditional constituents of the Broadband Forum. We are not aware of cable operators or equipment vendors that are engaged in the same activities and therefore the timeline for our industry may be very different.

The measurement client

The BBF document is inconsistent with regard to how the measurement client is described. The Background section states that "To scale the program to this level requires a different approach, one that builds measurement capability into existing network elements rather than through the provision of additional equipment." But the Adaptability section includes language that "the same standards should support implementation of a stand-alone client device or a client integrated within the modem terminating broadband service to the consumer." We feel that the language in the Background section is presumptuous in predetermining that embedding the testing capability into network elements is the only solution. Until further analysis is performed, we believe the more open-ended approach in the Adaptability section is warranted.

For example, to our knowledge the cost of embedding testing capabilities within network access (edge) devices has not been quantified and evaluated, and compared to alternative means of measuring broadband capabilities (e.g., placing test devices within service groups or nodes), that would be technically rigorous yet much less financially burdensome. We are not aware of any estimates of the incremental expense that would be required to provision network access devices with sufficient memory and processing capabilities to run a slate of performance tests, but if that incremental cost were $2 per unit, it would result in an additional cost of more than $160 million to insert this capability within all residential network access devices. It is important to note that this incremental cost would not be a one-time burden but would be implicit in each successive device replacement cycle. So at a

minimum, the Background section should be revised to conform to the language used in the Adaptability section.

However, given that the document states that the standards should support end-to-end measurements, this entire initiative may be misguided in focusing on the network access device, or a device attached to the network access device. To truly measure end-to-end performance the testing client should reside on the end user's equipment. To truly measure end-to-end performance a testing methodology should be designed that would enable the evaluation of performance along the different segments of the end-to-end route. Any seepage within the home network would be evaluated and accounted for, the performance on the ISP's network would be evaluated and accounted for, and the performance from the edge of the ISP's network to the application or content provider's server would be evaluated and accounted for. Designing and implementing such a testing protocol may be a formidable challenge, but if the goal of the standards process is to support end-to-end measurements, then the contemplation of an architecture that stops at the network access device doesn't fulfill the mandate. It is for this reason that the IRTF has been proposed as the preferred forum to begin discussions to vet the best overall end-to-end architecture for measuring application and network performance. Working on the measurement system architecture in the BBF without agreement on the measurement methodology seems the wrong order of events needed to produce a comprehensive measurement architecture.

Granularity

The document mentions that test results from 100,000 to 200,000 panelists would be required to achieve regional granularity. How were these figures derived? Does this sample group range contemplate covering the other 1,000+ wireline ISPs that are not currently participating in the Measuring Broadband America program? It would be useful to consult with a group of statisticians to accurately determine the minimum number of panelists needed to provide an accurate sampling of broadband users. This number is useful both as a requirement into the architecture as well as a useful tool to maximize efficiency by reducing the load on the underlying network and the measurement system.

Network Data Server

We will need to consult further with our member companies but we are fairly certain that the concept of a Network Data Server that would provide customer subscription data would be a non-starter for a variety of reasons, with security being the first and foremost concern.

Expanded scope of the proposed performance test specifications

Consistent with our belief that expanding the scope of testing to encompass all network access devices is unnecessary, overly expensive, and overreaching, we have a similar view on any expansion in scope of the proposed performance test specifications. There are tests run in the current SamKnows methodology that aren't reported upon, such as the streaming video and VoIP tests, that are placing unwarranted additional burdens on home and access networks. Although the current BBF document doesn't go into detail, the test specifications that were included in the June 6 next gen document add to

this unnecessary burden and strain. Expanding the scope of testing to include port reachability, splitting out UDP and ICMP, and measuring packet loss and extreme delay, to name a few, seem to be far outside the scope of information that the general public cares about or can understand.

Conclusion

The FCC initiated the SamKnows process to assess the performance of broadband ISPs and we now have two sets of empirical results that demonstrate that service providers are delivering robust broadband services. The access networks, the span from test point 5 to test point 2 [as indicated in the diagram on page 2 of the March 12, 2010 FCC RFQ for Residential Fixed Broadband Services Testing and Measurement Solution], have been vetted and verified. If the Commission is going to continue to devote resources to performance measurement, it should turn its attention to educating the general public about performance on home networks (test point 6 to test point 5) and the performance delivered by content and application providers (end-to-end performance). If end-to-end performance is the ultimate area of interest, then a testing protocol should be designed that evaluates end-to-end performance. Thank you for your consideration.